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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,315	12/29/2003	Tai-Cheng Yu		8002

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EXAMINER	
QI, ZHI QIANG	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/748,315	YU ET AL.	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12/29/03;.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 7 and 10 are objected to because of the following informalities:

Claim 7, recitation ". . .a light output surface . . ., and a bottom surface opposite to the light incident surface." should be clearly described as - - . . .a light emitting surface . . ., and a bottom surface opposite to the light emitting surface. - - Because the light output surface is the light emitted from the surface lighting device into the liquid crystal panel; and according to the specification and the figures, the bottom surface of the light guide is opposite to the light-emitting surface. The light incident surface is the surface in which the light beams enter into the light guide from the light source.

Claim 10, recitation ". . . a light guide plate having a light input surface for . . . " should be changed into - - . . .a light guide plate having a light incident surface for . . . - - Because the limitations describer later such as "micro-lenses for coupling the light beams from the point light sources into the light incident surface;", so that "a light input surface" should be "a light incident surface".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,283,602 B1 (Kawaguchi et al).

Claims 1 and 15, Kawaguchi discloses (col.1, lines 14-33; Fig.10) that a lighting device (surface lighting device) for a display device comprising:

- a planar light guide (101) having a light incident surface (101a);
- at least one light source (point-source lights) (102) are positioned to face (opposite to) the light incident surface (101a) of the light guide (101);
- lenses (micro-lens) (103) located between the point light source (102) and the light incident surface (101a), and the light emitted from the point-source lights (102) is diverged by lenses (103), respectively, and the diverged light then radiates in a planar form from a light emitting surface (101b) of the light guide (101), i.e., the lens (micro-lens) for collimating divergent rays emitted from the point light source into parallel rays; and the light guide (101) and point light source (102) at respective working distance from the micro-lens (because the lens 103 and the light guide 101 and light source 102 are different elements, and they should have a certain working distance), such that the divergent rays emitted from the point light source are coupled into the light incident surface via the lens (micro-lens).

Therefore, the limitations as claimed in claims 1 and 15 can read by the prior art of Kawaguchi.

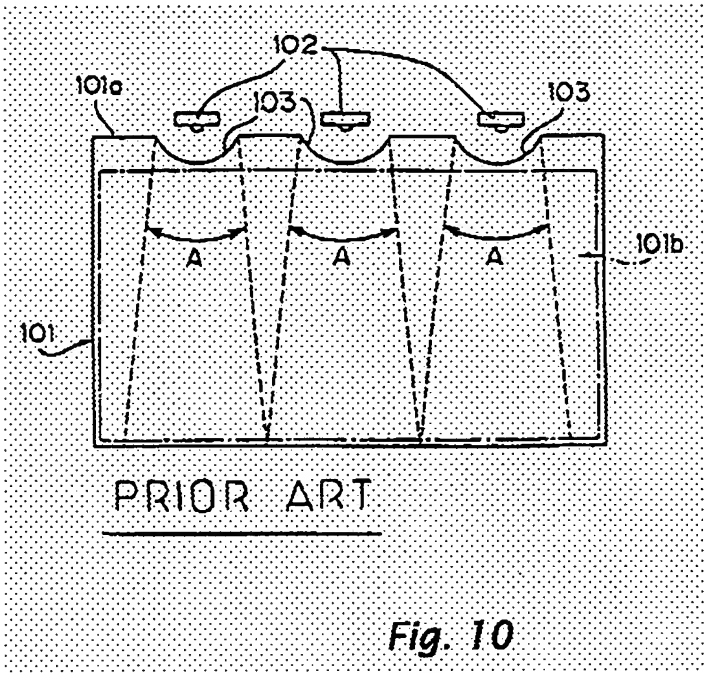

Fig. 10

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,283,602 B1 (Kawaguchi et al).

Claim 10, Kawaguchi discloses (col.1, lines 14-33; Fig.10) that a lighting device (surface lighting device) for a display device comprising:

- a planar light guide (101) having a light incident surface (101a);

- at least one light source (point-source lights) (102) are positioned to face (opposite to) the light incident surface (101a) of the light guide (101);
- lenses (micro-lens) (103) located between the point light source (102) and the light incident surface (101a), and the light emitted from the point-source lights (102) is diverged by lenses (103), respectively, and the diverged light then radiates in a planar form from a light emitting surface (101b) of the light guide (101), i.e., the lens (micro-lens) for collimating divergent rays emitted from the point light source into parallel rays; and the light guide (101) and point light source (102) at respective working distance from the micro-lens (because the lens 103 and the light guide 101 and light source 102 are different elements, and they should have a certain working distance), such that the divergent rays emitted from the point light source are coupled into the light incident surface via the lens (micro-lens).

Although Kawaguchi does not explicitly discloses in the col.1, lines 14-33 and the Fig.10 that using liquid crystal panel and a surface lighting device arranged under the liquid crystal panel.

However, Kawaguchi discloses (col.3, line 19 – col.4, line 14; Fig.1) that using liquid crystal panel (2) and lighting device (4) (a surface lighting device) arranged under the liquid crystal panel (2), such that illuminating the liquid crystal panel, and that is conventional to use liquid crystal panel and arrange a surface lighting device under the liquid crystal panel as a backlight for achieving uniform brightness of the image display.

Therefore, it would have obvious to those skilled in the art at the time the invention was made to use liquid crystal panel and arrange a surface lighting device under the liquid crystal panel as claimed in claim 10 for achieving uniform brightness of the image display.

6. Claims 2-7, 11-14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi as applied to claims 1, 10 and 15 above, and further in view of US 5,745,519 (Ruda et al).

Claims 2-4, 11-14 and 16-17, lacking limitation is such that the micro-lens has a superconic cross-section; and having a plane surface or a concave surface facing the point light source and a convex surface opposite the light incident surface; and the light being collimated from the point light source so as to couple the light beam into the light incident surface substantially parallel or the coupled non-divergent rays are substantially parallel, and the parallel is perpendicular to the light incident surface of the light guide.

However, Ruda discloses (col.1, lines 23 – 33; col.2, line 33 – col.3, line 54; Figs. 2-4) that using mirolens having superconic cross-section produces preferred result for light coupling in which the superconic lens is used for focusing light emitted by a point light source such as a laser diode, and such focusing would collimate the light beam to emit parallel light beam, and such parallel light beam (non-divergent rays) are perpendicular to the light incident surface; and such superconic lens having a plane surface or a concave surface facing the point light source and a convex surface opposite to the light incident surface (the light beams enter into the optical fiber that is the same principle as the light beams enter into the light guide) as shown in Figs 2-4.

Ruda indicates (col.1, lines 23-33) that such microlens with a superconic cross section produces a high coupling efficiency almost 92 to 95%.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use micro-lens having superconic cross section as claimed in claims 2-4, 11-14 and 16-17 for collimating light beam from point light source so as to achieving parallel light beam coupling high efficiency to the light incident surface of the light guide.

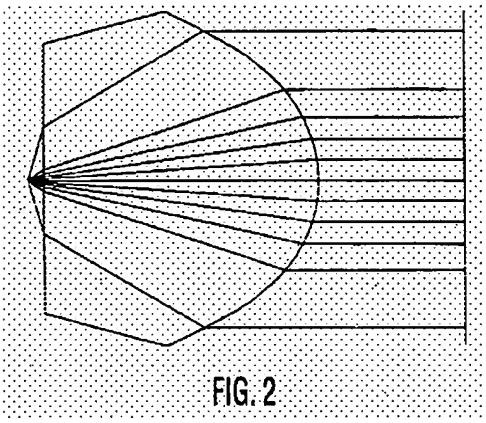

FIG. 2

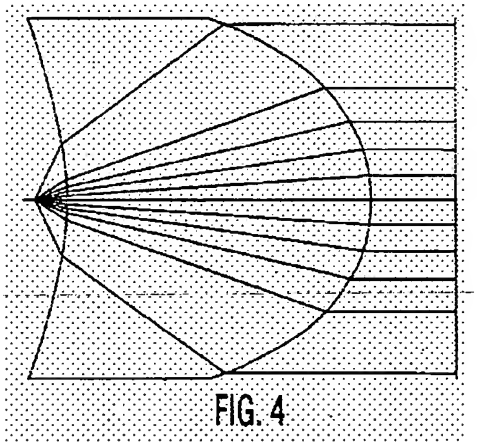

FIG. 4

Claim 5, Kawaguchi discloses (col.4, lines 4-14 and abstract) that the point light source is tungsten lamp (miniature bulb) or LED (light emitting diode), and that is conventional.

Claims 6-7, Kawaguchi discloses (col.4, lines 4-14; Fig.1) that the light guide (16) having parallelepiped shape as shown in Fig.1, and having a light emitting surface (16a) adjoining to the light incident surface (16b) and a bottom surface opposite to the light emitting surface (16a).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi and Ruda as applied to claims 1-7 and 10-17 above, and further in view of US 6,533,440 B2 (Koyama et al).

Claim 8, lacking limitation is such that the bottom surface of the light guide has a dot pattern thereon or has a plurality of v-cut grooves therein.

However, Koyama discloses (col.1, lines 10-25;Fig.1) that the bottom surface of the light guide plate having a dot-printed plane (2) (dot-pattern) so as to prevent the light leakage.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange a dot-pattern on the bottom surface of the light guide as claimed in claim 8 for preventing the light leakage.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi and Ruda as applied to claims 1-7 and 10-17 above, and further in view of JP 2002-93222.

Claim 9, lacking limitation is such that the light incident surface of the light guide

has an anti-reflective film thereon.

However, JP 2002-93222 discloses (paragraph 0017 and 0026; Figs.1-2) that the light guide 94) is provided with an anti-reflection film (20) at the light incident end (5) so as to reduce the light loss and improve the light utilization.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange an anti-reflective film on the light incident surface as claimed in claim 9 for preventing the light loss and improving the light utilization.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi
June 17,2005

DUNG T. NGUYEN
PRIMARY EXAMINER